REMARKS/ARGUMENTS

Claims 1-4 and 6-11 are pending.

Claim 1 is being amended to clarify that the gp120 is unlabelled, and to include the feature that an anti-gp120 antibody is added to the first reaction mixture to form a second reaction mixture. Claim 1 is being further amended to define the term "low affinity binding" by adding the phrase "has a dissociation constant (Kd) of at least about 200nM".

Claims 2 and 6-11 are being cancelled, without waiver or prejudice. Applicants reserve the right to file divisional or continuing applications directed to any canceled subject matter of this Application.

Claim 3 is being amended to reflect the dependency change from claim 2 to claim 1, and is further being amended to replace "ligand" with "anti-gp120 antibody".

As the Examiner will appreciate, support for these claim amendments are found in the specification as originally filed, for example, at page 21, lines 24-26; in originally filed claim 2; as well in Example 1 on page 122, lines 22-23; and in Example 2 on page 129, lines 10-11. Moreover, while there is not explicit recitation that gp120 is unlabelled, it is submitted that it is implicit from the specification as a whole and, in particular, the Examples that gp120 is unlabelled. No new matter has been added by these amendments. Entry of the above amendments and reconsideration and withdrawal of the rejections of claims 1, 3 and 4 is respectfully requested.

Claim 5 is being amended to correct the lack of antecedent basis: reference to Eu^{3+} as a radioactive atom is an error and the claim should refer to Eu^{3+} as a fluorescent atom. Support for this correction can be found in the specification as originally filed, on page 4, line 12.

New claims 16-21 are being added. Specifically, newly added claim 16 is dependent on claim 1 and adds the feature that a secondary antibody capable of binding to the anti-gp120 antibody is added to the second reaction mixture, support for which is found in the specification as originally filed, for example, in Example 1 on page 122, lines 23 and original claim 9. New claim 17 is based on originally filed claim 11, while support for new claim 18 is found on page 22, line 26. Support for new claim 19 may be found in Example 1 on page 122, line 23 and page 124, line 22, while new claim 20 finds basis in

original claim 10. Support for new claim 21 may be found on page 126, para. 4 and page 133, para. 2.

35 U.S.C. §112 Rejections

1. Claims 1 and 7 stand rejected, under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. According to the Examiner, "[c]laim 1 is indefinite in the recitation of 'low affinity binding'...[t]his language fails to adequately define the scope of the invention because it does not indicate the nature of the interaction between CCR5 and gp120." (See page 2, paragraph five, of the Office Action.) The Examiner also states that "'low' is a relative term that is not defined by the claim, and the specification does not provide a specific standard for evaluating a definite range to which the term 'low' refers". (Id.)

Applicants have herein cancelled claim 7, and have amended claim 1 to further recite "low affinity binding has a dissociation constant (Kd) of at least 200nM", thus rendering this rejection moot.

Accordingly, Applicants respectfully request entry of the amendment herein and reconsideration of the §112, second paragraph rejection provided in the Office Action mailed September 10, 2004.

2. Claim 1 stands rejected, under 35 U.S.C. § 112, second paragraph, for indefiniteness, with respect to the language "capable of modulating" as being "unclear" as to whether the recitation of "modulating" in claim 1 "refers to inhibiting or enhancing, the interaction between CCR5 and gp120". (See page 3, paragraphs two and four, of the Office Action.) It is readily apparent to the skilled person that the claim amendments moot this rejection. Applicants respectfully request entry of the amendment herein and reconsideration of the §112, second paragraph rejection provided in the Office Action mailed September 10, 2004.

3. Claim 1 stands rejected, under 35 U.S.C. § 112, second paragraph, for indefiniteness for not including a resolution step. Applicants believe that the currently amended claim 1 clearly recites a resolution step wherein the interaction between CCR5 and gp120 is detected, consequently rendering the rejection moot. Applicants therefore,

respectfully request reconsideration and withdrawal of this §112, second paragraph rejection of claim 1.

35 U.S.C. § 102(e) Rejection of Claim 1

The Examiner rejected claim 1 as anticipated by Wu et al. (U.S. Patent No. 6,528,625) (hereinafter Wu et al.). Applicants have amended Claim 1 to include the phrase "adding an anti-gp120 antibody to said first reaction mixture to form a second reaction mixture", which, as clearly stated by the Examiner, is not taught by the Wu et al. (See page 5 of Office Action "Wu et al. do not expressly teach the claimed second detectable ligand.") It is submitted that the present amendments to claim 1 moot the rejection under §102(e). Accordingly, for the above reason, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 1 as being anticipated by Wu et al.

35 U.S.C. § 103(a) Rejection of Claims 2-4 and 6-11

Claims 2-4 and 6-11 have been rejected under 35 USC §103(a) as being obvious over Wu et al. in view of U.S. Patent No. 6,312,689 to LaRosa (hereinafter LaRosa).

It is respectfully submitted that a *prima facia* obviousness rejection of claims 2-4 and 6-11 has not been properly established. Claim 3 and 4 are being written to be dependent on claim 1, and claims 6-11 are being cancelled. Claim 1 as amended moots the §102(e) rejection based on Wu et al., and was not otherwise rejected under §103(a). Dependent claims are non-obvious under §103 if the claim from which they depend are non-obvious. See *In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

The Examiner states that Wu et al. teach an assay method for determining whether an agent is capable of modulating the interaction of CCR5 and gp120, while the LaRosa reference teaches "a method for detecting the interaction of CCR2 with α-CCR2 antibody using a labeled secondary antibody that specifically binds to α-CCR2." (Page 5, paragraph 3 of the Office Action). As such, it is the Examiner's opinion that a person of ordinary skill in the art would have been motivated to modify the teachings in Wu et al. to include the use of a second detectable ligand (i.e., antibody), as taught in the LaRosa reference, and thus would render the present invention obvious. Applicants, however, respectfully traverse the rejection on the grounds that a *prima facia* case of obviousness

has not been established since Wu et al. in view of LaRosa neither implicitly or expressly teach or suggest all the elements of the present invention.

The LaRosa reference, cited by the Examiner, describes a binding assay used to assess the binding of a ligand to CCR2, and specifically, teaches a *high affinity binding* assay which detects the interaction of *labeled* 1D9 or 8G2, anti-CCR2 antibodies, with mammalian CCR2. (See LaRosa at Col. 7, lines 10-13 describing that the antibodies, which bind CCR2, bind at an affinity of about a $0.1x10^{-9}$ M to $1x10^{-9}$M range; and Col.17, lines 15-16 further asserting that "ligand binding of a mammalian CCR2 protein occurs with *high affinity*").

Therefore, not only does LaRosa not provide direction for the measurement of a low affinity interaction in an assay detection method, it also does not provide any suggestion, motivation or teachings for the use of low affinity binding interaction with respect to CCR5 and gp120. Particularly, the teachings in LaRosa are specifically directed to one type of chemokine, CCR2, and its interaction with *α-CCR2,* and more specifically with labeled 1D9 and 8G2, anti-CCR2 antibodies, at high affinity binding, and thus provides no basis or motivation for applying the use of a labeled secondary antibody in a detection assay with a chemokine other than CCR2.

The present invention, in contrast, enables the detection of weak interactions and specifically provides a method for detecting the *low affinity* binding of the interaction between CCR5 and *unlabelled* gp120, at about a 10^{-7}M to 10^{-6}M affinity binding range.

Accordingly, since the method of the present invention enables the measurement of a *low affinity interaction* between *labeled gp120* and *CCR5*, and specifically a "low affinity binding interaction" as "at least about 200nM", neither the teachings nor suggestion of Wu et al. in combination with the LaRosa reference establish a *prima facie* case of obviousness.

As such, Applicants respectfully request the Examiner to reconsider claims 3 and 4, as amended, and withdraw the §103 rejection of these claims.

With respect to claim 5, Applicants believe that the Examiner has inadvertently withdrawn claim 5 and respectfully request that this claim be reinstated in the pending Application. The Summary page of the Office Action, shows claim 5 as being withdrawn from consideration along with claims 12-15. However, in view of the Restriction

Requirement[1] mailed on March 10, 2004, and Applicants' Response to the Restriction mailed on May 7, 2004, Applicants elected Group I, claims 1-11 with traverse. As such, claim 5 is included in the elected group and should not have been withdrawn. Applicants, therefore respectfully request that claim 5 be reinstated and included in the currently pending claim set (Claims 1, 3-5 and 16-21).

Applicants believe that the amendments hereinabove place the Application in condition for immediate allowance. Therefore, entry of the amendments hereinabove, and reconsideration of the Office Action mailed September 10, 2004 are respectfully requested. Such prompt and favorable action is earnestly solicited.

Respectfully submitted,

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[1] Group I (claims 1-11); Group II (claims 12-13); and Group III (claims 14-15).